1. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$4^{-5x+5} = 343^{-3x-2}$$

A. $x \in [-1.17, -0.46]$

B. $x \in [-2.69, -1.42]$

C. $x \in [9.02, 9.75]$

D. $x \in [3.35, 3.68]$

E. There is no Real solution to the equation.

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2. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+2} + 7$$

A. $(a, \infty), a \in [-14, -4]$

B. $(-\infty, a), a \in [7, 13]$

C. $(-\infty, a], a \in [7, 13]$

D. $[a, \infty), a \in [-14, -4]$

E. $(-\infty, \infty)$

---

3. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{-3x+4} = \left(\frac{1}{25}\right)^{-2x-3}$$

A. $x \in [-0.9, 0.5]$

B. $x \in [6.1, 7.7]$

C. $x \in [-8.9, -5]$

D. $x \in [0.5, 1]$

E. There is no Real solution to the equation.

---

4. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(2x+5)+5=3$$

A. $x \in [57, 62]$

B. $x \in [-26.5, -14.5]$

C. $x \in [-14.5, -11.5]$

D. $x \in [-5.48, 2.52]$

E. There is no Real solution to the equation.

---

5. Solve the equation for x and choose the interval that contains x (if it exists).

$$7=\ln\sqrt[7]{\frac{9}{e^{5x}}}$$

A. $x \in [-2.4, -1.5]$

B. $x \in [-9.7, -9.3]$

C. $x \in [-3.5, -2.9]$

D. There is no Real solution to the equation.

E. None of the above.

---

6. Which of the following intervals describes the Domain of the function below?

$$f(x)=\log_2(x-5)+9$$

A. $(a, \infty), a \in [4.7, 5.6]$

B. $[a, \infty), a \in [8.7, 9.4]$

C. $(-\infty, a), a \in [-5.2, -1.7]$

D. $(-\infty, a], a \in [-13.9, -7.3]$

E. $(-\infty, \infty)$

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7. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-9} + 6$$

A. $(-\infty, a), a \in [-8, -1]$

B. $[a, \infty), a \in [4, 7]$

C. $(-\infty, a], a \in [-8, -1]$

D. $(a, \infty), a \in [4, 7]$

E. $(-\infty, \infty)$

---

8. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_3(-4x + 6) + 4 = 2$$

A. $x \in [0.27, 0.86]$

B. $x \in [2.77, 4.53]$

C. $x \in [-1.97, -0.05]$

D. $x \in [1.42, 2.24]$

E. There is no Real solution to the equation.

---

9. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x - 3) - 2$$

A. $(-\infty, a], a \in [1.6, 2.21]$

B. $[a, \infty), a \in [-2.49, -1.67]$

C. $(-\infty, a), a \in [-3.51, -2.15]$

D. $(a, \infty), a \in [2.45, 3.96]$

E. $(-\infty, \infty)$

---

10. Solve the equation for x and choose the interval that contains x (if it exists).

$$15 = \ln \sqrt[5]{\frac{29}{e^{4x}}}$$

A. $x \in [-5.23, -1.23]$

B. $x \in [-20.91, -16.91]$

C. $x \in [-6.66, -4.66]$

D. There is no Real solution to the equation.

E. None of the above.

---

11. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{5x-2} = \left(\frac{1}{64}\right)^{2x+4}$$

A. $x \in [0.7, 2.3]$

B. $x \in [-0.5, 1]$

C. $x \in [-5.8, -4]$

D. $x \in [-1.3, -0.9]$

E. There is no Real solution to the equation.

---

12. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x+7} - 4$$

A. $(-\infty, a), a \in [-5, -3]$

B. $[a, \infty), a \in [2, 5]$

C. $(a, \infty), a \in [2, 5]$

D. $(-\infty, a], a \in [-5, -3]$

E. $(-\infty, \infty)$

13. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{2x+4} = \left(\frac{1}{216}\right)^{4x-5}$$

A. $x \in [-11.9, -8.5]$

B. $x \in [0.1, 1.9]$

C. $x \in [3.3, 5.2]$

D. $x \in [-0.8, -0.1]$

E. There is no Real solution to the equation.

14. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(-3x + 7) + 4 = 3$$

A. $x \in [-2.41, -1.96]$

B. $x \in [2.08, 2.29]$

C. $x \in [-39.55, -39.22]$

D. $x \in [2.64, 2.86]$

E. There is no Real solution to the equation.

15. Solve the equation for x and choose the interval that contains x (if it exists).

$$8 = \ln \sqrt[5]{\frac{26}{e^{8x}}}$$

A. $x \in [-1.64, -1.45]$

B. $x \in [-4.64, -4.54]$

C. $x \in [-1.71, -1.63]$

D. There is no Real solution to the equation.

E. None of the above.

---

16. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x+1) - 2$$

A. $(a, \infty), a \in [-1.49, -0.82]$

B. $[a, \infty), a \in [-2.14, -1.75]$

C. $(-\infty, a], a \in [1.85, 2.34]$

D. $(-\infty, a), a \in [1, 1.14]$

E. $(-\infty, \infty)$

---

17. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x-6} - 9$$

A. $[a, \infty), a \in [8, 15]$

B. $(-\infty, a], a \in [-13, -7]$

C. $(-\infty, a), a \in [-13, -7]$

D. $(a, \infty), a \in [8, 15]$

E. $(-\infty, \infty)$

---

18. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(-3x+8) + 4 = 2$$

A. $x \in [-5.67, -2.67]$

B. $x \in [4, 10]$

C. $x \in [9.33, 16.33]$

D. $x \in [1.65, 7.65]$

E. There is no Real solution to the equation.

---

19. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x+3) + 9$$

A. $[a, \infty), a \in [8.8, 12.2]$

B. $(a, \infty), a \in [-4, -2.2]$

C. $(-\infty, a], a \in [-9.1, -8.6]$

D. $(-\infty, a), a \in [0.2, 4.3]$

E. $(-\infty, \infty)$

---

20. Solve the equation for x and choose the interval that contains x (if it exists).

$$17 = \ln \sqrt[5]{\frac{24}{e^{4x}}}$$

A. $x \in [19.46, 23.46]$

B. $x \in [-6.34, -2.34]$

C. $x \in [-9.71, -6.71]$

D. There is no Real solution to the equation.

E. None of the above.

---

21. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{3x-2} = \left(\frac{1}{36}\right)^{-3x+5}$$

A. $x \in [-2.1, -0.8]$

B. $x \in [0.5, 1.7]$

C. $x \in [-2.9, -1.4]$

D. $x \in [1.8, 4.8]$

E. There is no Real solution to the equation.

---

22. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+8} + 6$$

A. $(-\infty, a), a \in [4, 9]$

B. $(a, \infty), a \in [-8, -4]$

C. $(-\infty, a], a \in [4, 9]$

D. $[a, \infty), a \in [-8, -4]$

E. $(-\infty, \infty)$

---

23. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{-3x-3} = \left(\frac{1}{49}\right)^{-2x-5}$$

A. $x \in [2, 6]$

B. $x \in [-6.18, -1.18]$

C. $x \in [-1.8, 1.2]$

D. $x \in [-25.54, -18.54]$

E. There is no Real solution to the equation.

---

24. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(-2x + 5) + 4 = 2$$

A. $x \in [10.5, 15.7]$

B. $x \in [-12, -8.4]$

C. $x \in [2.2, 4.2]$

D. $x \in [16.2, 20.7]$

E. There is no Real solution to the equation.

---

25. Solve the equation for x and choose the interval that contains x (if it exists).

$$19 = \sqrt[4]{\frac{23}{e^{8x}}}$$

A. $x \in [-0.83, -0.29]$

B. $x \in [-9.92, -9.69]$

C. $x \in [0.88, 1.59]$

D. There is no Real solution to the equation.

E. None of the above.

---

26. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x - 7) + 4$$

A. $[a, \infty), a \in [-8.6, -5.9]$

B. $(-\infty, a), a \in [1.4, 4.8]$

C. $[a, \infty), a \in [4.2, 8.2]$

D. $(-\infty, a), a \in [-4.2, -3]$

E. $(-\infty, \infty)$

---

27. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x-3} - 5$$

A. $(-\infty, a], a \in [-9, -1]$

B. $(a, \infty), a \in [-1, 9]$

C. $(-\infty, a), a \in [-9, -1]$

D. $[a, \infty), a \in [-1, 9]$

E. $(-\infty, \infty)$

---

28. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5 (3x + 5) + 5 = 3$$

A. $x \in [-13.3, -10.2]$

B. $x \in [-2.6, -1.2]$

C. $x \in [35.1, 42.2]$

D. $x \in [-10.5, -8.4]$

E. There is no Real solution to the equation.

---

29. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2 (x + 1) + 3$$

A. $[a, \infty), a \in [-2.32, -0.07]$

B. $(-\infty, a), a \in [-4.53, -1.15]$

C. $(-\infty, a), a \in [2.02, 4.17]$

D. $[a, \infty), a \in [-0.6, 1.75]$

E. $(-\infty, \infty)$

---

30. Solve the equation for x and choose the interval that contains x (if it exists).

$$7 = \ln \sqrt[6]{\frac{15}{e^{4x}}}$$

A. $x \in [-3.59, -2.27]$

B. $x \in [-4.18, -3.43]$

C. $x \in [9.55, 9.85]$

D. There is no Real solution to the equation.

E. None of the above.
